

the arrest of gastro-intestinal secretion—are therefore wanting in these cases; and I believe it to be in such that emetics and cathartics act freely after division of the nerves. The rarity of such cases is the reason why those experiments are proportionately so few, in which such drugs act in their ordinary manner after the operation.

ART. X.—*Vesico-vaginal Fistules. Comparative Analysis of different Surgical Methods. Results, American and European.* By NATHAN BOZEMAN, M. D., of New York.

To illustrate by clinical facts the legitimate surgery of the female genito-urinary organs, and to criticize operations, that hide without removing the evils against which they are directed, are the aims of this communication. It is a reply to Dr. Gustave Simon, Professor of Surgery in the University of Heidelberg,¹ in deference to whose claim of priority in the operation of Kolpokleisis (transverse obliteration of the vagina), we begin by withdrawing our own, made in 1867. It happens, however, that historical documents, overlooked by us both, attribute to French surgeons the initiative in question.

In 1845, A. Bérard,² after mentioning Vidal's occlusion of the vulva in 1833, says with regard to incurable vesico-vaginal fistules:—

"I modified this method by incising the mucous membrane at the entry of the vagina, and dissecting up a cuff-like fold about two centimetres long, round the free border of which I passed a thread (as in Dieffenbach's purse-string suture). The ends of this thread I drew with a catheter through the fistule into the bladder and out of the urethra, puckering the fold of mucous membrane at its bleeding surface; then I faced the raw surfaces of the vagina below with three points of quilled suture. The urine still trickled through two minute fistules, at the patient's death some weeks later, from pleuritis and peritonitis."

Kolpokleisis here was not less completely effected than in the first operations recorded by Prof. Simon.

Bérard also cites Velpeau's treatment of a vesico-vaginal fistule, complicated with atresia vaginæ, as in Margaretha Hubert's case, the first in which Prof. Simon attempted kolpokleisis in 1855. Velpeau had failed to complete this closure with the actual cautery and suture, and the urine still dribbled away, as after Prof. S.'s two "doppelnahrt" operations and repeated cauterizations. M. Lenoir had attempted to obliterate a vagina, otherwise normal, below the seat of a fistule. He had cauterized, with

¹ See his letter to the author in the *Deutsche Klinik*, Nos. 45 and 46, 1868, translated into the *American Journal of Obstetrics*, vol. ii., No. 2, 1869; and also translated into English, and circulated in pamphlet form, by Prof. Simon.

² *Diet. de Méd.*, vol. xxx. p. 495.

the hot iron, a complete circle of its walls, had applied the tincture of cantharides for their farther refreshment, and introducing a curved wooden tube into the previously dilated urethra, and a larger one into the rectum, had, by drawing their outer ends together, forced the two raw surfaces of the vagina into contact, and so held them, with a view to their adhesion, but this manœuvre failed of its object.

A vesico-vaginal fistule having resulted from abuse of pessary in one of Dupuytren's observations, spontaneous atresia of the vagina had ensued below the fistule, and the catamenia were voided through the bladder. Carteaux had published another case like this, consecutive on a tedious labour.¹ Such were the facts, in view of which Bérard practised kolpoplexis at la Pitié, as above shown, to remedy a large loss of substance in the vesico-vaginal septum with hernia of the bladder into the vagina. He refreshed the surfaces with bistoury and scissors, but used the purse string and quilled sutures. Up to the 21st day the operation seems to have been an almost complete success, and the patient's death was due to other causes.

"The reason," says our illustrious brother of Heidelberg, "why I have proved the validity of my claims of priority at such lengths, is simply this, that in my opinion kolpoplexis is the most important plastic operation which in the last decennia has originated from one single man. The operation of vesico-vaginal fistula by uniting the borders of the defect is indeed, in its present perfection and precision, a much more important acquisition than kolpoplexis and probably the greatest achievement of our century in plastic surgery; but it has not been carried to that perfection by a single man, but, on the contrary, operators of all nations have contributed their share to it. The "uranoplastic" of our ingenious countryman—von Langenbeck—could alone be placed by the side of kolpoplexis, as far as the safety of the performance and its immediate success are concerned. It would rank higher still on account of its more frequent occurrence, if its benefit for the voice in increasing its purity could be secured in all or in the majority of cases. But as in many cases this result is not obtained at all and in others only incompletely, kolpoplexis must be considered the more important operation, as in all cases it fully answers its purpose. This operation which I invented at the time when the obliteration of the vulva, proposed by Vidal, proved inefficacious in reëstablishing continence of urine, has already been performed more than fifty times with complete success. Through it many patients with incurable defects of the bladder have been freed of the most intolerable suffering, viz., the incontinence of urine. I have myself succeeded in eighteen cases in effecting perfect obliteration, and every German surgeon who practises the art of curing vesico-vaginal fistules, has recorded one or more successful cases of that kind."

In the autumn of 1858, a young negress, Jane F., aged 20, entered our private Infirmary at Montgomery, Ala., for the treatment of two fistules, one vesico-, the other recto-vaginal, the results of extensive sloughing the year before, and due to the usual cause, the pressure of the child's head in prolonged labour; for this distressing accident levies its tribute of suffering at the portals of maternity, and the primipara is, for obvious reasons, as in the case before us, its most frequent victim. On her first admission, she was operated upon by our former partner, Dr. J. B. Gaston, but without success. She came under our personal care January 1st, 1859.

Examination revealed the loss of the whole vesico-vaginal septum, with half the urethral portion of the vagina, leaving the pubic arch bare, $\frac{1}{2}$ or $\frac{3}{4}$

¹ Journ. de Lucas Championnière.

inch on either side of the symphysis, while above, the cervix uteri had lost its infra-vaginal portion. The immobility of its borders, as well as of the womb itself, forbade any compensation for the loss of substance, by drawing down the womb to close the opening. The recto-vaginal fistule, two fingers in size, was oval, with its long axis transverse, and lay $2\frac{1}{2}$ inches from the anus. At its lower border a hard unyielding band spread across the posterior vaginal wall. The lower border of this fistule became gradually mobile by dint of incisions and of dilatation, until it allowed coaptation of its refreshed edges beneath the button-suture, which completely protected them from the urine as it poured into the vagina through the large hole in the base of the bladder. Removal of the suture apparatus on the 8th day revealed complete closure of this fistule by union of its edges. To close the other chasm was impossible. By what operation might the distressful flow of urine be prevented? Already in a case analogous to this we had closed up the vulva, like Vidal, but found little advantage from that. The point in question was to convert the remains of the bladder and vagina into one common cavity. This object we effected by paring the anterior vaginal wall up to the corresponding border of the fistule and round to an equal extent upon the lateral and posterior walls. These raw surfaces were then buttoned together in a transverse line, and the vagina closed up to the fistule, thus leaving no pouch for urine below and avoiding that most serious objection to Vidal's operation of closing the vulva by an antero-posterior line of union.

Drs. Gaston, Norton, and other physicians, witnessed our transverse occlusion of the vagina in this case, with eight wire sutures, and a button $1\frac{3}{4}$ inches long, which, when removed on the 9th day, left the atresia complete. This was March 15, 1859, and from this time the patient retained and passed her water at will; it never dribbled away unless she neglected to void it for many hours. She lay dry all night without having to get up, and could walk about for three or four hours at a time without wetting herself. These advantages have been in great measure maintained during eleven years. We had frequent good reports of her during the first four; at the ninth she was in health and doing all the housework of a family. Dr. R. P. Means, of Hickory Grove, Alabama, has just seen her and replies to our questions as follows:—

"Jane Finley is living and her general health is very good. She can retain her urine while walking about sometimes, but it occasionally dribbles. If when lying down she immediately answers the call to urinate, she can retain the urine long enough to get up and go out doors. She does not complain of any pain, but says that she used to retain her water much better soon after the operation on her than she can now."

It seems then that Time is growing envious of our success in the first only case of transverse obliteration of the vagina on our record, a case remarkable too as the first now living, in which complete occlusion was effected in the urethral portion of a vagina of normal dimensions, and after utter destruction of the vesico-vaginal septum. This result was obtained by a single operation with our button suture. Its record may be found in the January number of the *New Orleans Medical and Surgical Journal* for 1860. Full details of it were in the printer's hands when that Journal was suspended at the breaking out of the war. We at that time regarded it as unique and our method as original. Two cases mentioned

by Dr. Sims in 1858¹ present, however, some analogous points. In the first, a part of the bas fond of the bladder had been destroyed along with the infra-vaginal cervix, and Dr. S. had united the vaginal walls about an inch above the urethra. This case would tally well with Prof. Simon's second topographical division of kolpokleitic operations.

In Dr. S.'s second case, only a small part of the neck of the bladder remained attached to the urethra. The mouth of the vagina was closed by uniting its posterior wall to the urethra as they lay in contact, leaving a pouch $\frac{3}{4}$ of an inch deep below the anterior border of the fistule, in which urine might stagnate and stone accrete, the same evils as result from Vidal's method.

In either of these cases the only complication arose from the loss of the infra-vaginal cervix. In one, the whole trigone remained intact; in the other, a part of it. The integrity of the urethra invited the soldering of the anterior borders of these fistules to the cervical stump by the button-suture, well known here at the time when Dr. Sims operated on them. With his clamp-suture, on the other hand, it would have been impossible to hold the two borders together long enough for union to be effected. This upper clamp would have rested, in the first case, across the stump of the cervix, on a plane far above the lower clamp which would have been imbedded in the soft tissue of the vagina, above the root of the urethra, a position compromising the success of the operation. In the second case, his upper clamp would have occupied the same position across the stump of the cervix, but the lower one would have been thrown directly across the root of the urethra; the womb could not then have been drawn and kept down long enough for closure of the fistule by union with its anterior border. The constant drag of the depressed womb upon the front clamp would have strangulated the tissues, and their slough would have left a mutilated urethra with a fistule much enlarged. If confined to the use of the clamp-suture, then, Dr. Sims' expedient became inevitable.

Prof. Simon's case, Maria B.,² presents a vesico-vaginal fistule as big as a cherry, high up in a normal vagina. Upon this Prof. S. operated often in vain, sometimes trying to close the fistule with his doppelnaht; at others, to obliterate the vaginal canal. At last he succeeded in closing the fistule, a result surely preferable to kolpokleisis for the patient, since the question for her was, vagina or no vagina? On the other hand, the surgeon's reputation could not suffer from success, however tardy, in his first and legitimate object. The first kolpokleisis completed in Germany appears to have been made by Prof. Wernher, of Giessen, who has recently imparted to us its instructive though sinister details, and the discovery of a stone in the vaginal pouch after the death of the patient.

¹ Silver Sutures in Surgery, page 16.

² Ueber die Operation Blasenscheiden fistelndurch die blutige naht, p. 5, 1862.

This was the eighth kolpokleisis in Germany previous to our own operation in 1859. One of the eight was operated by Prof. Roser, of Marburg; the six remaining cases were Prof. Simon's. Let us now endeavour to fix the rational limit of application for this method of transverse obliteration, to which Prof. S. attaches so much value. Let him speak :—

"Since the invention of kolpokleisis, however, I have not remained satisfied with that mode of operation, to which you still adhere. On the contrary, I have constantly laboured to perfect the method of operating; to multiply its chances of success, in the different parts of the vagina, and to render its indications more precise. Whereas I had, in my first cases, operated only in the lower parts of the vagina, and had repeatedly met with small remaining fistules which could not be brought to heal, such occurrences are now extremely rare, and I close, as the case may be, in any height of the vagina, and always immediately below the defect. Nay, in one case, where the fistule was high up in the fornix, I needed only one-half of the latter for the obliteration, thus preserving the vagina in its whole length. (See my *Beiträge zur plastischen Chirurgie*, Prag. 1868, fol. 216.) Moreover, whereas I used to consider kolpokleisis indicated only where very large defects existed, I have now limited this indication a good deal, having cured at later periods very considerable defects by uniting the borders of the wound by sutures, like these (C, T, A, $\bar{A}$), by resorting to incisions along the sides and parallel with the sutures, and even by transplanting a flap from the vesico-vaginal wall. The size of a defect has, for the reasons enumerated, during the last five or six years not been in my eyes an indication for kolpokleisis. On the other hand, I have found among the large number of difficult and complicated cases which have come under my treatment, several in which it was either impossible, or too dangerous to unite the borders, so that here I resorted to kolpokleisis."

Here are his rules laid down for guidance in kolpokleidic operations, distinguished topographically¹ in three classes :—

1. Obliteration of the vagina in its urethral portion.
2. Obliteration of the vagina within the limits of the base of the bladder from the root of the urethra to the cervix uteri.
3. Obliteration of the vagina at the fornix, transversely, if the fistule be very large; oblique, if small and high up on either side the fornix.

His indications for kolpokleisis² are :—

1. Great loss of substance, making it impossible to bring the sides of the fistule together.
2. Inaccessibility of fistules, from their high position, from the inversion of their edges, &c.
3. Loss of infra-vaginal cervix and danger to peritoneum.
4. Hemorrhage into bladder, if severe, after operations.
5. Confinement by adhesions of the stump of the cervix uteri, inside the bladder, so that the catamenia escape through the urethra.
6. Atresia vaginæ above fistules, involving their posterior border, so that its orifice communicates between the vagina and bladder.
7. Atresia of urethra with one fistule above and another below.
8. Uretero-vaginal and uretero-uterine fistules.

Prof. S. remarks the greater difficulty of closing up the urethral portion of the vagina.

¹ *Beiträge zur Plastischen Chirurgie*. Prag. fol. 216, 1868.

² *Op. cit.*, p. 229.

Very curious is his treatment of uretero-vaginal fistules (*harnleiter-scheidenfisteln*). He makes a new fistule near the mouth of the womb, then obliterates the vagina just below the false passage between it and the ureter. This converts the upper part of the vagina into a pouch for the menstrual fluid, and for the urine of one kidney with a passage to the bladder through the small artificial fistule. No less novel is his management of the uretero-uterine fistules (*harnleitermutterfisteln*), which he claims to have met with. Here he closes the vagina higher up and just under this newly-formed fistule, so that the urine of the ureter implicated passes from the cavity of the womb through the cervical canal, and reaches the point of closure, whence the artificial fistule conducts it into the bladder. The menstrual discharge takes this same course. These operations both prevent impregnation and partially mutilate the vagina.

But most novel and startling of all is Prof. Simon's statement that the contact of urine is not prejudicial to the uterus nor to its menstrual function, that the confinement of urine in the vagina is innocuous, and the condition of patients with closed vaginas is satisfactory!

Calculi, says he, are not apt to form if kolpokleisis be complete. He attributes to an overlooked suture-knot, which served as nucleus, the only case of stone that he has met with.

These peculiar physiological views prepare us to appreciate the "cure" of eighteen patients, 17 per cent. of all his cases, by the closure of their . . . vaginas.

More than thirty other interdicts of this long suffering organ have been placed, as he tells us by other German surgeons, among them, Roser, Wernher, Wilms, Ulrich, Bardeleben, Wagner, Esmarch, Spiegelberg, and Hegar.

The details of these thirty cases not having been cited, we reserve our judgment concerning the expediency of the operations, and confine our remarks to Prof. Simon's.

Our attention having been turned to the treatment of vesico-vaginal fistules in 1853, the same year, it seems, that Prof. S. took up this subject, and having before the interruption of our female practice by the war and its consequences, in 1860, put on record forty-one cases, our opinions have not been hastily formed, and we feel it our duty to protest against the latitude of Prof. S.'s indications for condemning the passage of the vagina.

What is vesico-vaginal fistule? A solution of continuity, maintained in the vesico-vaginal septum by the passage of urine, the contact of which is a chief obstacle to the process of healing.

In what does the cure of a fistule consist? In the union of its edges without serious lesion to the functions of the bladder, vagina, or uterus. No result inferior to this is a true cure, however complete the continence of urine. This physiological standard should never be lost sight of in our

choice of remedial methods. What is kolpokleisis? The conversion of the vagina into a urinal, with prevention of the sexual act and generative function, restricting the uterus to the part of an excreting organ. Per contra, it claims to obviate the incontinence of urine.

Of Prof. Simon's eight indications for kolpokleisis, we recognize as valid only the first one, viz., a loss of substance such as to prevent the coaptation and consequent union of the fistulous borders.

No loss of substance can prevent a cure so long as the womb can be drawn down to fill the aperture. In cases where this seemed impossible at first, it has gradually yielded to our daily tractions with polypus forceps on the cervix and stretching of the surrounding tissues, until the two sides of the fistule would meet. This once effected we feel confident of cure by our button-suture. Since its invention we have never had recourse to incisions, in order to relax tissues and take the strain off our sutures, as Jobert was so much in the habit of doing, and as Prof. Simon, after condemning it, has been fain to practise likewise. Even when a force of several pounds had been needed to bring the sides together, our button-suture has always sufficed to maintain them in apposition until their complete union. Incisions we apply only to the preliminary treatment of cicatricial bands, or to points of atresia, which, after opening, we dilate with tents, not attempting to close the fistule until we have removed, as far as possible, such obstacles.

All Prof. Simon's indications precited, except the first, have been met and overcome in our practice, without having recourse to kolpokleisis. At "uretero-uterine" fistules, indeed, we may place a point of interrogation, for their diagnosis does not appear to us well founded in the cases stated. Bérard describes such a case in full detail. He injected coloured fluids into the bladder, he introduced a probe into the cervical canal, and another through the urethra, so that it should strike the first, if a fistulous communication existed. He measured separately the fluid escaping from the vagina, and what escaped from the urethra; he smelt what escaped from the os uteri. Now such means may aid in ascertaining the existence of a vesico-uterine fistule, but they cannot determine whether the communication between the uterine cavity and the urinary apparatus occurs at a point beyond that of the normal contiguity of these organs. A fistule $x + y$, of track unknown, may exist; the precited means of diagnosis may fail to prove it vesico-uterine; they cannot, however, prove it uretero-uterine, and we have seen vesico-uterine fistules in the diagnosis of which they failed, because of the extreme smallness of the fistulous track and its valvular condition. We have been unable to pass a coloured fluid through it from the bladder in quantity sufficient to be seen in the cervical canal; nor could we pass a probe, however delicate, in the same direction, yet the two streams of urine, one from the vagina, the other from the bladder, always flowed separately. Was this a proof that the urine of the vaginal

stream came from the cavity of the womb? Post hoc, ergo, propter hoc, will not answer here, as the linen test has frequently attested in our hands. By this test we have detected the precise situation of a passage between the bladder and the cervical canal, even when the fistule was too small to be seen by the strongest reflected light. In one case cured by us January 1869, the point of communication with the cervical canal was near the internal os and the fistulous track above, bounded only by the utero-vesical fold of peritoneum; this membrane was punctured while operating, but no serious consequences ensued. Here, even when the cervical canal was fully dilated, a strong reflected light failed to reveal the fistulous orifice, although while the patient lay upon her back, the urine flowed freely from the os externum. Now on mopping dry the cervical canal, and laying a bit of old linen on its anterior wall, its saturation showed at once the orifice at that point, by closing which we cured the patient.¹ No organ was injured, no function compromised by our operation.

A patient has recently come to us with a rent of the urethra half its length back from the meatus, and a small vesico-vaginal fistule, the remains of a large one thus far closed by Dr. Emmet, of the New York Woman's Hospital. The anterior lip of the cervix had been soldered to the root of the urethra by three operations with the interrupted silver suture. The womb was retroflexed, and the cervical canal, patulous, was about an inch from the urethral orifice and on a lower plane. The cicatricial tissue resulting from these previous operations had to be removed, after which we closed the vesico-vaginal fistule by our first button-suture. Nearly all the urine still escaped through the split urethra and in the dorsal position; much ran back upon the anterior surface of the vaginal patch, formed by the cervix uteri, and so into the cavity of the womb itself. We closed the urethral rent at a second operation and restored control over the urine by mechanically raising the cervix above the urethra. Then she could retain her water very well while lying down, and tolerably when standing or walking. On removing the supporter, the cervix would drop again and the urine resume its course into the womb. In the knee and elbow position the urine was seen to flow from the cervical canal and we mopped out the cavity of the womb. This might have been supposed to be a uretero-uterine fistule, and had the urine not been seen running back into the cervical canal while in the dorsal position, its escape from the os uteri might have been attributed to a fistule either between the cervix uteri and bladder, or between the cavity of the womb and one of the ureters. That neither of such channels existed was proven by plugging the urethra and mopping the cavity of the womb. But had there been a small vesico-uterine fistule high up, with this patulous state of the cervix, the urine escaping into the latter would have reached the cavity of the womb, and the true fistule, escaping observation, might have been deemed uretero-uterine. Then the only way to get at the truth would have been to plug the os internum and to ascertain positively that no vesico-uterine fistule existed, which we can do by the linen test, and not otherwise, in our ex-

¹ For the *linen test*, see our more extended notice in the Transactions of the New York State Medical Society, p. 154, 1869.

perience. The removal of the plug from the os internum would have let the contained urine escape and so proved the existence of a uretero-uterine fistule.

Of uretero-vesico-vaginal fistules we can speak from sufficient experience, having in 1856 adopted a simple and effective treatment, and since then found such fistules little if at all more troublesome than the common vesico-vaginal. Paring the end of the ureter implicated, we thrust a pointed blade $\frac{1}{4}$ of an inch up, and piercing it as well as the vesical mucous membrane, split them both down to the edge of the fistule. This gives the urine a fall into the bladder far enough from the united edges of the fistule, and leaves in the line of union the whole thickness of the vesico-vaginal septum. Were the fistule simply uretero-vaginal, the first step would be to convert it into a uretero-vesico-vaginal passage by incising the vesical mucous membrane. A uretero-vesico-vaginal fistule was brought to us for treatment a few weeks ago by the wife of a physician from the State of Kentucky, and was operated upon by us in presence of Prof. Boeck, of Christiania, Norway, and Drs. Lee, Jones, Richardson, and M. J. Moses, of this city.

Incarceration of the cervix uteri within the bladder is regarded by Prof. S. as an indication for kolpopleisis. In several such cases presented to us we have always disengaged the cervix and closed the fistule, restoring to the catamenia its natural outlet.

Atresia of the vagina above the fistule indicates, says Prof. S., that we should close the vagina just below it, leaving the fistule open between the bladder and the diverticulum, thus formed by the two obliterated points of the vaginal canal. Has the surgeon no better resource than this blind imitation of Nature?

In 1860 Dr. Faget, of New Orleans, placed under our care Madame B., of that city, who had a small vesico-vaginal fistule in the trigone, with atresia vaginæ between this and the cervix so nearly complete that only the smallest probe could pass. More than an inch of the canal was imperforate. This we partially reopened before attempting to close the fistule, but we could not succeed until we had completely dilated the vagina; then control over the urine was restored, and our patient six months afterwards became pregnant.¹

In the annals of surgery, nay, even in those of psychology, we have met with nothing more astounding than Prof. S.'s assertion, by a gentleman of Prof. Simon's rank in our profession, that, after effecting kolpopleisis, the urine becomes healthy and does not harm the uterus, when we consider the deep pocket formed in the vagina with no other outlet than the small fistule into the bladder. These fistules, moreover, are very often found at the highest point of the vaginal pocket, thus favouring the retention of urine, which at every menstruation will be mixed with the blood of this

¹ See New Orleans Med. and Surg. Journ., July, 1866.

eliminative secretion, an admixture which can hardly fail to promote decomposition and its irritative sequences. Would Prof. Simon attribute then, to the vaginal mucous membrane, the property of arresting fermentation, of preventing those well-known changes which urine undergoes when long confined in the bladder, forming earthy deposits, calculi, and acrid ammoniacal lixivia?

In the academic discussion of Jobert's elytoplastic cure, Gerdy, who found it difficult to believe that a piece of skin adherent with a mucous membrane could bear with impunity contact with urine, said, "We know, indeed, that urine has the property of irritating, inflaming, ulcerating, and striking with gangrene whatever it touches, the vagina itself cannot become accustomed to it."

Velpeau remarks,¹ "When the fistule gives passage to urine continually, the vagina, the vulva, and the thighs, bathed in this irritating liquid, are inflamed, excoriated, and become the seat of cutting pains, sometimes of pustules and of ulcerations which at first aspect might be supposed syphilitic. The lips of the wound gradually become hard, callous, and thickened." What was the final result of kolpoplexis in the first complete success obtained by transverse obliteration of the vagina in Germany? Its operator, Prof. Wernher, of Geissen, replies to us December 12th, 1869, "My patient died last summer. At the autopsy, I found in the vagina above the seat of closure, a stone as big as a pigeon's eye." This completes the history.

Between Prof. Wernher's case and ours there is a difference in character, which explains the difference in results after periods of twelve and eleven years respectively.

In the first case a partial atresia preëxisting had been completed below the fistule by Prof. W., thus converting the vagina above the line of obliteration into a pouch for the retained urine. The accretion of stone which occurred here is a probable event in Dr. Sims' two cases, and in all that have this anatomical character. In our own kolpoplexis, on the contrary, we obliterated the remaining urethral portion of the vagina up to the anterior border of the fistule, leaving no other pouch above than that formed between the posterior vaginal and the superior vesical walls, with the urethra at the most dependent portion of the same, and the cervix uteri at the most elevated. Such are the conditions that expose least to retention of urine and to irritation of the genital organs.

The same objections apply in some measure to the practice of folding the cervix uteri and edges of the fistule inside of the bladder, as often done by leading surgeons. The vagina is here narrowed only in sections, and not necessarily incapacitated for its functions, but pouches are formed in

¹ Leçons Orales, t. ii. p. 242.

the bladder. Several calculi, after such operations on the vagina, have been reported by Dr. Emmet, who advises vaginal lithotomy in connection with vesico-vaginal fistula.¹

"We have seen the existence of calculi in the bladder cause perforation of the septum. The formation has generally been subsequent to the operation for the closure of a fistula, through which means the nucleus has been furnished, and a pouch in which the stone first became encysted."

As a stone in the bladder may occasion a fistule by the ulcerative absorption of the vesico-vaginal septum, so may another fistule be occasioned by the pressure of a stone in the vagina after its occlusion, or else the adhesions may give way below at the point of occlusion, a result not improbable after complete kolpocleisis during many years. Under our treatment at this moment is a fair example of Nature's kolpocleidic operations, in which, after having covered up and hid away old lesions, she has left the parts in a state analogous to that of surgical obliteration. The results before us teach what are to be expected from the latter, and confirm the previsions of pathological chemistry.

Mrs. —, of —, Alabama, aged 23, a perfectly well-formed woman, after a first labour of eighty-four hours, March 31, 1865, lost by sloughing part of the lower third of her vagina, which, on healing, left a small urethro-vesico-vaginal fistule, and a recto-vaginal fistule higher up, with loss of control over the passage of either urine or feces. Under this persistent local irritation the vagina just below the urinary fistule continued, however, to contract, enfolding both fistules until by degrees she had regained control over the excretions. Her general health improved, but eighteen months after the first injury, and in the fourth month of a second pregnancy, she miscarried. Cystitis soon after set in, with a profuse discharge of bloody mucus. Five or six days of such painful inflammation continued, recurring at intervals of three or four months. It seemed to be provoked by the exertion of standing or walking too long. Still menstruation remained normal and general health fair, with increased retentive power. By the end of the third year her vagina seemed completely closed; she lay dry all night, and could be around in the day for several hours at a time without dribbling. But now came a change for the worse. Upon over-exertion she became conscious of a fulness, as though something in the lower part of the vagina was pressing to come away, with urging to micturate every few minutes. This trouble increased until it culminated in an attack of cystitis. The urine, now always turbid, deposited a thick, tough slime, and smelt very strong after standing a little while. A year ago fatigue in nursing a friend brought on a severe attack, and which continued a whole month. The sanguinolent, or brown turbid and offensive character of the urine has continued from that time with variations in degree up to the present date, at which we find it largely mixed with pus. During the past year her health has suffered much; she has become excessively nervous and her menstruation painful. A deep seated pain is assigned to the left ovarian region, and soreness is complained of over the whole abdomen. Since last autumn the flow has lasted but two days, and the epochs been retarded eight or ten

¹ Treatise on vesico-vaginal fistula, p. 217, 1868.

days. Excruciating lumbar pains coincide with the cystic exacerbations at intervals of only eight or ten days. She has repeatedly swooned from their severity and remained for hours unconscious. This unrelenting march in the gravity of her condition produced a state of anguish which, without positive derangement of mind, still urged towards suicide, but in this contention of spirit wiser counsels happily prevailed, and she has sought from the resources of surgery a salvation to which Nature has proved inadequate, although she had effected complete kolpoplexis, "*that most important plastic operation which, in the last decennia, has originated from one single man*"!!!

Actual state, March 10th, 1870.—The vagina admits only a No. 6 bougie. The urethra is closed half an inch from the meatus. The vulva is much excoriated with scalding on passage of urine, which has been the case from the first. Attempts to dilate the vaginal stricture cause extreme pain.

Preliminary Operations.—Our first indication being to restore the vagina, we proceeded after etherization, assisted by Drs. T. C. Finnell and J. H. Hinton, of New York, to cut deep into the cicatricial band, from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick along its sides. Then we incised the posterior wall, introduced our speculum, and exposed the vagina above, which was deeply congested and dotted with little red spots over its anterior wall. A small urethro-vesico-vaginal fistule was brought into view just within the point of vaginal occlusion, and admitted a No. 4 bougie. The vaginal surface for nearly an inch above this point was studded with granulations that bled at the slightest touch. The neck of the womb was much enlarged and its mouth patulous. Pus escaped with the urine through a catheter in the bladder. We all three verified the purulent character of this discharge. The recto-vaginal fistule was reopened by our dilatation of the vagina. We shall reopen the urethral passage, and then close, first, the urethro-vesico-vaginal fistule; afterwards, the recto-vaginal fistule. Spontaneous atresia of the vagina had here restored continence of urine by drawing the small fistule up into the cicatricial band. The vaginal muscles could then aid the sphincter vesicæ in controlling the flow of urine through the urethro-vesical and vaginal orifices almost in juxtaposition. The urine, however, flowing into the vagina, had attacked its mucous membrane and the cervix, as betrayed by their congested, hemorrhagic, and patulous state. Endometritis and ovaritis had supervened upon the cystitis and vaginitis. The discharge of muco-pus tinged with blood is now about $\frac{1}{2}$ a pint in twenty-four hours. The subjoined analysis by a highly competent person, Dr. Wm. B. Lewis, of this city, was made on a specimen of the urine drawn at the last exacerbation of our patient's cystic trouble, which occurred a few days after the operation precited.

"*March 18.* Odour: pungent, aromatic. Colour and appearance: reddish, densely turbid. Sediment after standing: $\frac{1}{8}$ bulk of specimen, rather close, but light, of a brownish-white colour. Reaction: alkaline. Specific gravity: 1.025. Earthy phosphates completely precipitated from supernatant fluid, but chlorides abundant. Albumen: $\frac{1}{2}$ of the whole volume. Microscopical: oil globules, minute crystals of triple phosphates, pus corpuscles, amorphous urate and epithelium from the bladder. No casts were found. If present they would be discovered with great difficulty, as the strongly marked chemical characters of the specimen cloak the organic sediments and render their microscopical characters indefinite.

"The objects discovered by the microscope are in great part such as are naturally observed in alkaline urines. The features of this specimen indicate

that the cystitis from which the patient suffers is largely due to retained urine and pus. The large proportion of the latter accounts for the albumen present.

We should state here while the general character of the urine in this attack remained the same, as observed by the patient for months before this preliminary operation, there was marked amelioration in her sufferings. Only for a few moments at one time was the pain as severe as to cause swooning. The paroxysm was much shorter than usual, lasting only about two days, but the flow of mucus and pus continued the same as formerly, though diminished in quantity."

The patient's good constitution and the conservative reactions of her organism during the earlier stages of her traumatic malady, its continued and vigorous efforts for self-recovery, more frequent in ratio to the local irritation, in short, the whole picture before us confirming and elucidating the pathologic history, forbids us to attribute the decline of health or sympathetic sufferings to other than hydraulic and chemical causes, viz., the stagnation of urine retained in contact with mucous surfaces unprepared to resist its irritating salts, and whose exudations of protective mucus have but increased the mischief by accelerating putrid fermentation. To open a free passage for discharge of these morbid secretions is the first step dictated by experience towards removing their causes.

We do not exhibit the foregoing as anything more than the particular application of a general principle. Lesions apparently the same occasion different degrees of suffering in different patients. European, and especially German peasant women, may be more robust, more phlegmatic than our American women, but chemistry and mechanics are invariable. To their laws are due the fearful sufferings we have witnessed in case of spontaneous kolpopleisis, and we venture to suggest that if the luminaries of German surgery will descend from their Olympian heights, look up their kolpopleidic cases and look into them again, they will see cause to change the note of triumphant gratulation with which Prof. Simon announces his successful operations.

ART. XI. — *Traumatic Tetanus*. By CHRISTOPHER JOHNSTON, M. D.,
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IN offering the notes of two cases of traumatic tetanus treated successfully by conia used hypodermically, we would not claim for that agent a specific virtue; but we desire to show the more than coincidental subsidence of tetanic symptoms under its employment, and to recall attention to the effect of conia as antagonistic, or at least antithetical, to the symptoms of tetanus. Thus the tetanic spasm of the muscles is that of rigid tonic and constant contraction, never completely yielding in intervals during its progress, and finally giving way, if ever, just previous to the fatal event, or more rarely, by far, under the influence of remedies so